Citizen Science Projects (MOOC) 1.5

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Welcome to the WeObserve Glossary of commonly used terms.
You can refer back to it when you find new terms on the course you are not familiar with.

##A

Anthroposphere

The anthroposphere is the sphere of the earth system or its subsystems where human activities constitute a significant source of change through the use and subsequent transformation of natural resources, as well as through the deposition of waste and emissions.

Activities

Activities are the actions taken by an individual or a group.

Assessment

An assessment is a process of determining, judging or deciding the amount, value, quality, or importance of something. Assessments are important in citizen science projects to evaluate their success and impact in relation to what they set out to achieve.

Assumptions

Assumptions are ideas that are accepted as true without proof. Assumptions can be helpful when used as the foundation for building concepts, strategies, and actions by using “what if” scenarios. Assumptions can help consider possible situations and explain how and why a given course of action will work. But assumptions can be misleading when accepted as reality without careful consideration.

Atmosphere

The atmosphere is a layer - or a set of layers - of gases surrounding a planet.

##B

Baseline

Clearly defined starting point from where a project begins, improvement is judged, or a comparison is made. A baseline study is an assessment of a current situation that identifies the starting points for a programme or project. It provides an initial collection of data that can be used as a basis for comparison with the data collected as part of a campaign.

Biodiversity

Biodiversity refers to the variety of life. It is seen in the number of species in an ecosystem or on the entire earth. Biodiversity is usually explored at three levels - genetic diversity, species diversity, and ecosystem diversity.

Biome

A large naturally occurring community of flora and fauna in a major habitat, e.g. forest or tundra.

Bio-region

A bio-region is a land and water territory whose limits are defined not by political boundaries, but by the characteristics of the natural environment.

##C

Calibrate

To mark (a device, instrument or sensor) with a standard scale of readings. This can be done by: correlating the readings to a standard to check accuracy and/or adjusting to account for external factors.

Campaign

The public-facing phase of a citizen science project, designed to achieve social innovation or change. Other terms also used are activities or missions.

Canopy cover

Canopy cover refers to how much of the land is covered by various land covers. E.g. how much of an area of land is covered with trees, grass, vegetable plants, or mulch.

Citizen Observatory

Citizen Observatories are environmental monitoring projects that anyone (with or without formal scientific training) can participate in, to help collect data that will improve how we understand and manage our environment, and improve policy and practices. These initiatives often use modern technology such as smartphones to report observations, and the internet to analyse the data. Citizen Observatories fall into the wider category of citizen science.

Citizen Science

Citizen science covers a broad spectrum of scientific research in which members of the public (i.e. citizen scientists) participate in collaboration with trained scientists in a range of ways - from forming a research question, collecting the data, to data analysis, and eventually publication of findings or policy guidance.

Citizen sensing

Citizen participation in environmental monitoring and action, often using sensors, which is participatory and empowering to the citizen.

Community-based environmental monitoring

A process that combines a combination of different stakeholder groups such as: concerned citizens, government agencies, industry, academia, community groups and local institutions to collaborate and monitor, track and respond to issues of common concern. It is an approach to environmental monitoring that promotes leadership from the community and the use of the data to help informed decision-making.

Community-level indicators

Community level indicators (CLIs) are measurements, either physical or online, that a community is interested in monitoring. CLIs captured by the community in addition to sensor data, and helps to understand those measurements.

Community of practice

A group of people who share a concern or a passion about a topic and become more knowledgeable on the topic through working together.

Control

In a scientific experiment, this is a group, plot or sample that is kept constant and unchanging so it can be used to compare results against another in which an intervention is applied.

Crowdsource

Gathering information into a specific project by enlisting the services of a large number of people, usually done through the internet.

##D

Data quality

Data quality refers to how accurate the information we collect is, and is often down to our actions, methods and tools. Having high-quality data is key to a successful investigation.

Deforestation

The removal of forest.

Do-It-Yourself Science

Do-It-Yourself (or DIY) Science is non-professionals doing science outside of the traditional lab or academic settings and often in co-creation spaces such as, Makerspaces, FabLabs, Hackerspaces, community-based labs and beyond.

##E

Earth Observation

Earth observation is the gathering of information about the planet's physical, chemical and biological systems. It is used to monitor and assess the status of, and changes in, natural and built environments.

Ecosystem

A dynamic and interactive biological community of organisms and their physical environment, often with a complex network of relationships and interconnections.

Evaluation

Rigorous analysis of complete or ongoing activities to assess what aspects of a project worked and which did not work as expected.

##F

Flora and Fauna

Animal and plant life present in a particular region or time.

Food security

The 1996 World Food Summit in Rome defined food security as "achieved at the individual, household, national, and global level, when all people, at all times, have physical and economic access to safe and nutritious food sufficient to meet their dietary needs and food preferences for an active and healthy life".

##G

Governance

Policies and practices supporting different forms of management in different contexts.

Ground truth

This describes information collected at specific locations by direct observations and measurements rather than by inference from remote satellite data. Ground truthing allows image data from satellites to be related to real features and variables on the ground.

##H

Hypothesis

In an experiment, our hypothesis is our expectation of what will happen. We can either prove our hypothesis (what we expect does happen) or disprove it (what we expect does not happen). Either finding is a valid and important outcome.

##I

Internet of Things

The Internet of Things extends the internet beyond standard devices like desktop PCs, laptops and smartphones. This is achieved by embedding ‘smart’ technology into traditionally ‘dumb’ objects, creating a cloud-based network of objects around us. For example, the ability to turn on lights or the heating with your phone.

Impacts

The changes over a defined period of time that is the result from the grouping of outcomes which affect the wider economy and/or society beyond those directly involved with the original action.

Intervention

Actions created and aimed at making changes to individual, social or organisational structures.

##L

Land sharing

In a land sharing’ strategy, production techniques are used to maintain some biodiversity across cultivated land.

Land sparing

In a ‘land sparing’ approach, some land is set aside for conservation while other land is used intensively to produce agricultural produce.

##M

Maker culture

Maker culture is a contemporary culture or subculture of a technology-based extension of DIY culture that is connected with hacker culture and is the creation of new devices as well as tinkering with existing ones. The maker culture in general supports the use of open-source hardware.

Makerspace

A workspace where people with common interests such as fabrication, technology, science or art, can meet to work on projects, socialise and collaborate. A Makerspace may also be referred to as a Fablab or Hackerspace, depending on the focus of work conducted there.

##O

Objective

Not influenced by personal feelings, interpretations, or prejudice. The opposite of subjective.

Objectives

A way to define the purpose and goals of a project.

Observational study

An observational study involves collecting and analysing data without changing existing conditions.

Open data

Data and information that is available to everyone to access, use and share.

Open data challenge
An online or physical co-creation challenge that supports teams in developing new products or services using open data for social good.

Open source

Computer programs with source code available to the public for use and modification.

Organism

An individual form of life. This covers all forms of life, including animals and plants.

Outcomes

A consequence of an action or way something turns out.

Outputs

A particular dissemination, publication, presentation, communication or pathway in which the outcomes are made available to the public.

##P

Participatory governance

A form of governance which strives to involve a wider number of relevant members of a population to make meaningful contributions to decision making.

Pollution

Pollution occurs when substances such as acids, nutrients or metals, are added to an environmental substance (e.g. air, water, soil), resulting in increases in their concentrations above safe levels.

##Q

Qualitative

Non-numerical data, e.g. the quality of a crop yield

Quantitative

Data collected in numerical form, e.g. the weight of crop yield

##R

Raw data

Data that have not yet been processed for use; in the form they were collected.

##S

Sample or data sample

A sample is a set of data that is taken from, and used to represent, a greater set or “population” of data. A sample is usually taken where it is unrealistic to measure the whole larger data set. The sample is used to make an informed guess (inference) about characteristics of the whole population. For example, the average height of women in your country is calculated from a representative sample of women – not by measuring all women.

Soil moisture

Refers to the amount of water in the soil and it is a key variable in controlling the exchange of water and heat energy between the land surface and the atmosphere through evaporation and plant transpiration. The field capacity, permanent wilting point (PWP) and available water content are called the soil moisture characteristics.

Statistics

A branch of mathematics dealing with the collection, organisation, analysis, interpretation, and presentation of data. It is a key tool that makes complex data easier to find patterns or differences in.

Subjective

The opposite of objective – based on or influenced by personal feelings, tastes, or opinions.

Sustainable Development Goals (SDGs)

17 goals set by the United Nations to address global challenges, including: poverty; inequality; climate; environmental degradation; prosperity; and peace and justice.

##T

Temporal

Relating to time.

Time series

A time series is a sequence of values taken at successive (equally) spaced points in time.

Topography

The physical arrangement of the natural features of an area of land, especially the shape of its surface.

Treatment

In an experiment, the treatment is the change in conditions that we make. For example, adding compost to see if it increases crop yield. Treatments are usually compared to a control.

##V

Validation

The process of checking or proving the accuracy of something.

Variable

A characteristic or measurement that can vary e.g. from low to high, from light to heavy. We know in advance of starting research what the measurement is of, but not what the value will be.

Visualisation

The use of graphs, plots and other graphics to communicate data in an accessible, understandable and usable way.

##W

Weathering

General process by which rocks are broken down at the Earth’s surface into such things as sediments, clays, soils and substances that are dissolved in water. Weathering can be physical, chemical or biological.